



# Countermeasures That Work

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# Overview

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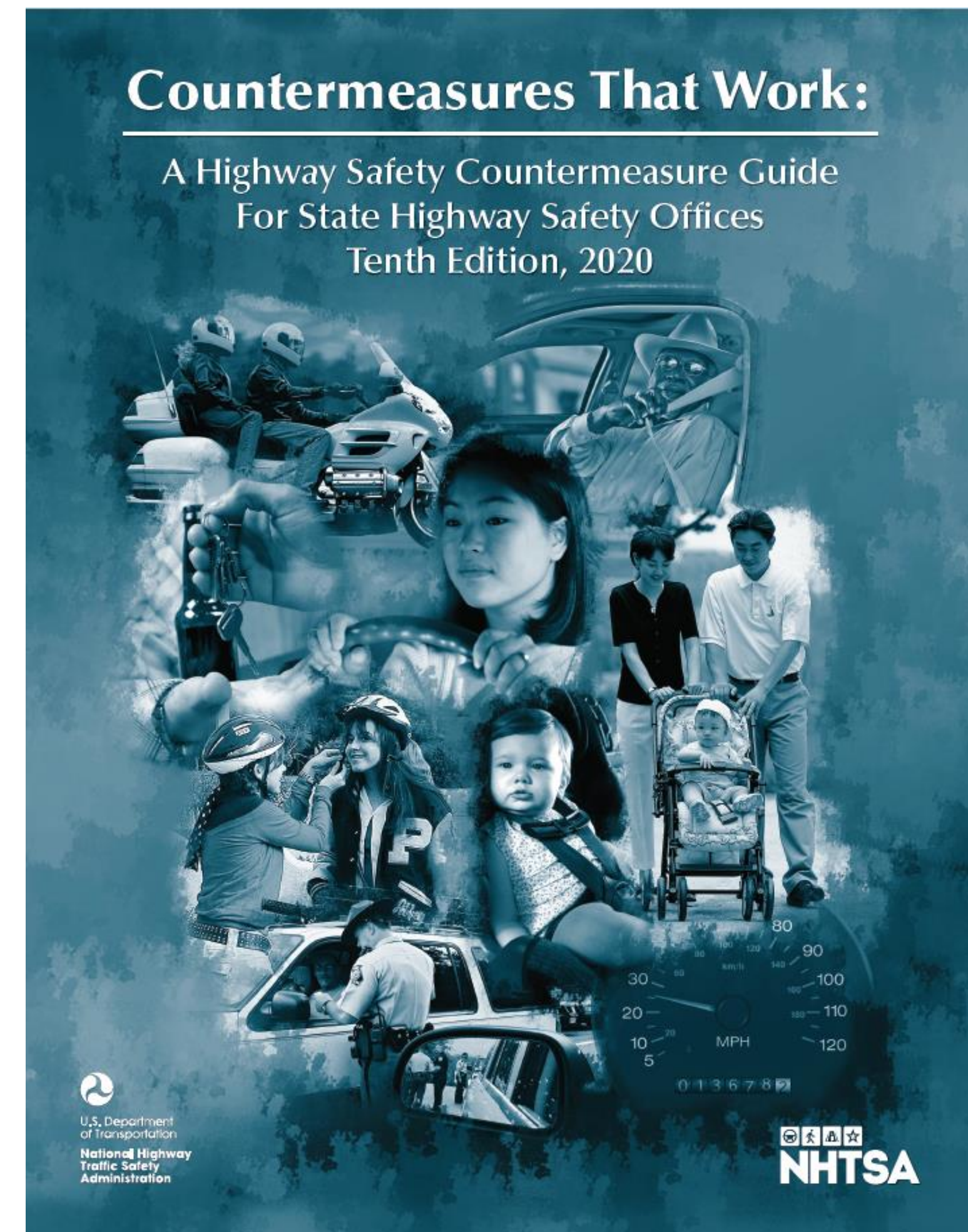




# Countermeasures That Work (CMTW)

## *What is it?*

Basic reference to assist SHSOs and other professionals interested in highway safety in selecting effective, evidence-based countermeasures for traffic safety problem areas.





# What is the Effectiveness Star-Rating System?

Stars	Effectiveness
★ ★ ★ ★ ★	Effective in several high-quality evaluations with consistent results
★ ★ ★ ★	Effective in certain situations
★ ★ ★	Likely to be effective based on balance of evidence from high-quality evaluations or other sources
☆ ☆	Effectiveness still undetermined; different methods of implementing this CM produce different results
☆	Limited or no high-quality evaluation evidence

\* Based primarily on demonstrated reductions in crashes.



# Effectiveness Caveats

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- The best CM may have little effect if it is not implemented vigorously, publicized extensively, and funded satisfactorily
  - Effectiveness can vary immensely
  - What is done vs. how it is done
- Star-rating probably shows the maximum effect that can be realized with high-quality implementation
- Changes in behavior and knowledge are taken into account in the ratings when crash information is not available



# Types of Studies Considered

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- Randomized Control Trials (few)
- Quasi-experimental studies
- Cohort and case-control analytic studies
- Observational studies
- Time series
- Case-studies
- Surveys

Evaluations that show crash reductions and/or reduced deaths and injuries are weighted more heavily than behavior change interventions.



# What Topics are Covered?

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- Alcohol- and Drug-Impaired Driving
- Seat Belts and Child Restraints
- Speeding and Speed Management
- Distracted Driving
- Motorcycle Safety
- Young Drivers
- Older Drivers
- Pedestrian Safety
- Bicycle Safety
- Drowsy Driving



# What is Included in CMTW?

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- An overview and starting point for readers to become familiar with the *behavioral* strategies and CMs in each program area
- Focuses on CMs with evidence of effectiveness
- Only CMs supported by traditional highway safety grant programs are considered
  - As such, vehicle and roadway-based CMs are not included
- Updates to the guide are based only on published research





# What is Included in Each Chapter?

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- One chapter per problem area
- Brief overview of the problem area's size & characteristics
  - Main CM strategies
  - Glossary of key terms
  - A few general references
- Table listing specific CMs relevant to SHSOs
  - Summarizes CM effectiveness, cost, use, & implementation time
- Each CM discussed in ~1-2 pages
  - References to the most important research summaries & individual studies





**NEW**

# CMTW - Traffic Techs

- Alcohol-Impaired Driving
- Alcohol Measurement Devices
- Drug-Impaired Driving
- Seat Belts
- Child Passenger Safety
- Speeding and Speed Management
- Distracted Driving
- Motorcyclists
- Young Drivers
- Older Drivers
- Pedestrians
- Bicyclists
- Drowsy Driving



## TRAFFIC TECH

Technology Transfer Series



DOT HS 813 119
November 2021

### Countermeasures That Work – Drug-Impaired Driving

The National Highway Traffic Safety Administration has published its 10th edition of *Countermeasures That Work*, a basic reference to assist State Highway Safety Offices and other highway safety professionals in selecting effective, evidence-based countermeasures for traffic safety problems. This Traffic Tech highlights the effective drug-impaired-driving countermeasures from Chapter 1, Alcohol- and Drug-Impaired Driving.

**Background**  
Driving while impaired by alcohol and other drugs remains one of the largest contributors to road crashes. Despite significant progress around the world, alcohol-impaired drivers remain a continual issue, and there is increased concern about drug-positive drivers. We have strong foundational work related to alcohol-impaired driving and are working toward the same with drugs, especially cannabis (Compton, 2017). It is important to produce research that helps us understand the impact of drugs, illegal or legal, on driving-related skills; prevalence of drug use by drivers; crash risk, detection strategies, and countermeasures to decrease impaired driving.

Some of the challenges in studying, measuring, and creating countermeasures to address drug-impaired driving include the following:

- There is a wide range of drugs, both licit and illicit, that can potentially impair driving.
- Although the relationship between blood alcohol concentration (BAC) and driving impairment is clear and well-documented, the relationship between levels of drugs and driving impairment has not been established.
- Alcohol leaves the body in a predictable pattern, whereas other drugs are eliminated at differing rates; for example, blood levels of certain drugs can accumulate with repeated administrations and be detected well after impairment has ceased.
- It is not unusual for drivers to take more than one impairing drug at the same time or to combine drugs with alcohol.
- Alcohol can be measured reliably through blood and breath tests, but other types of drugs can only be mea-

ured through more intrusive tests of bodily fluids such as urine or saliva.

- Improvements to the quality and quantity of drug-impaired driving data are still in the initial stages of development.
- Countermeasures for addressing potential driving impairments from prescription and over-the-counter drugs may need to be different from countermeasures for alcohol- and illicit drug-impaired driving.

**Key Factors of Drug-Impaired Driving Countermeasures**  
Compton et al. (2009) described four basic issues that must be addressed to better understand the extent of the problem of drug-impaired driving:

- What drugs impair driving ability?
- What drug dose levels are associated with impaired driving?
- How frequently are impairing drugs being used by drivers?
- What drugs are associated with higher crash rates?

There are still sizeable gaps in our understanding of the effects of drugs on driving. The one consistent finding across studies is that the risk of driver impairment increases when drugs are combined with alcohol.

The following sections discuss behavioral countermeasures for drug-impaired driving that have been supported by research as consistently effective across situations (★★★★★), effective in certain situations (★★★★), or promising/likely effective (★★★). For more information on these countermeasures, their effectiveness, cost, use, and time to implement, see the full Countermeasures report.

**Enforcement of Drug-Impaired Driving**

Countermeasure	Effectiveness	Cost	Use	Time
7.1 Enforcement of Drug-Impaired Driving	★★★	\$\$	Unknown	Short

Enforcement of drug-impaired-driving laws can be difficult. Typically, drug-impaired driving is only inves-

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tigated when a driver is obviously impaired but the driver's BAC is low. If drivers have BACs over the illegal limit, many officers and prosecutors do not probe for

To date, there have been no studies examining the effectiveness of enforcement in reducing drug-impaired driving or crashes; however, the training may be similarly as effective as alcohol-impaired-driving enforcement.

**Costs**—As with other enforcement strategies, the primary costs are for law enforcement time and training. The time to conduct a DRE evaluation of a driver is typically 45 minutes to an hour.

**Time to implement**—Drug-impaired-driving enforcement can be integrated into other enforcement activities within 3 months, depending on the time and length of training. DRE training consists of 9 days of classroom instruction, and DRE candidates are also required to perform supervised field evaluations to become certified.

**Conclusion**  
Similar to alcohol-impaired driving, drug-impaired driving is primarily addressed through a combination of laws, enforcement, and education. Relatively few countermeasures have been developed to specifically address drug-impaired driving, and there has been little evaluation of drug-impaired-driving countermeasures overall.

**References**  
Compton, R., Vegega, M., & Smither, D. (2009). *Drug-impaired driving: Understanding the problem and ways to reduce it* (Report No. DOT HS 811 268). National Highway Transportation Safety Administration. <https://rosap.nhtl.bts.gov/view/dot/1949>  
Compton, R. (2017, July). *Marijuana-impaired driving—A Report to Congress* (Report No. DOT HS 812 440). National Highway Transportation Safety Administration. <https://rosap.nhtl.bts.gov/view/dot/34995>  
Venkatraman, V., Richard, C. M., & Magee, K. (2021). *Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices*, 10th edition (Report No. DOT HS 813 097). National Highway Transportation Safety Administration.

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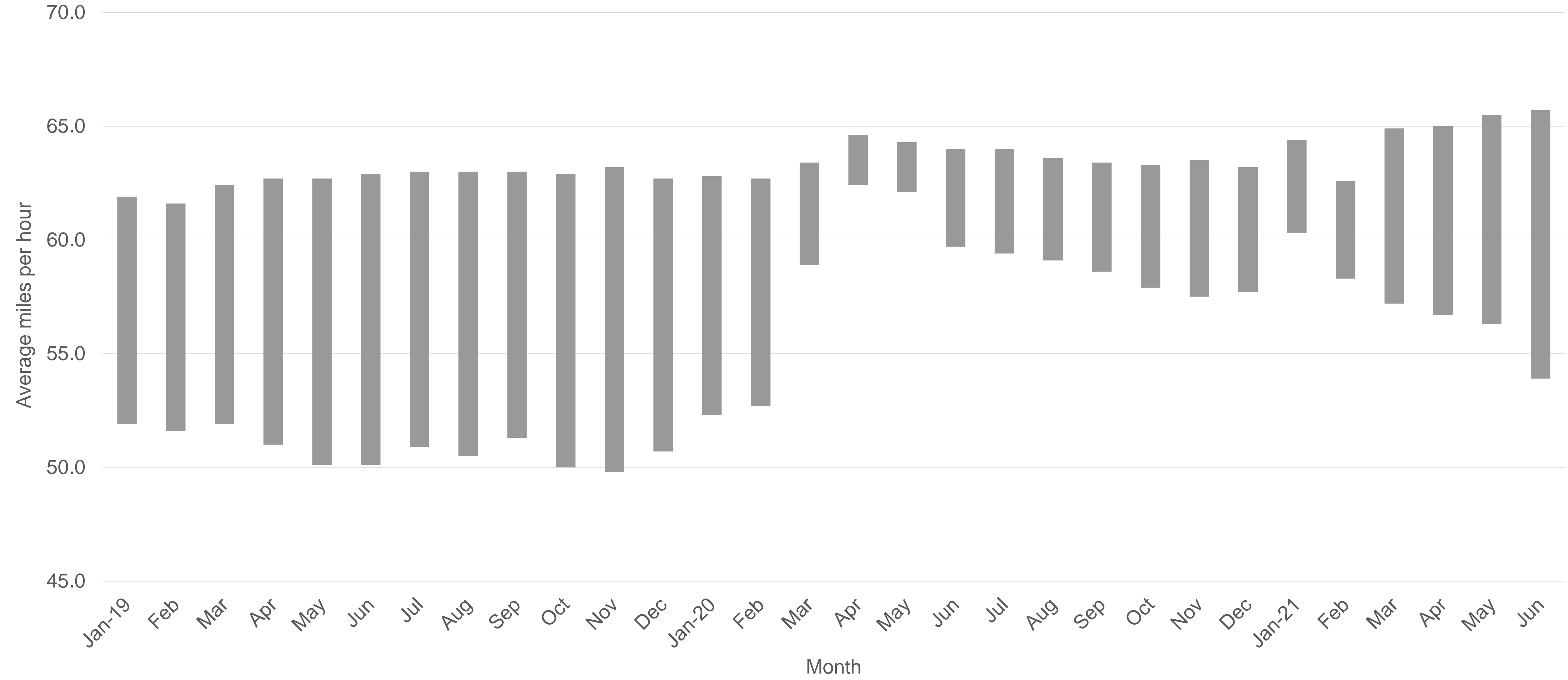
# NHTSA COVID Special Reports

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- [Continuation of Research on Traffic Safety during the COVID-19 Public Health Emergency: January – June 2021](#)
- [Update to Special Reports on Traffic Safety during the COVID-19 Public Health Emergency: Fourth Quarter Data](#)
- [Update to Special Reports on Traffic Safety during the COVID-19 Public Health Emergency: Third Quarter Data](#)
- [Examination of the Traffic Safety Environment During the Second Quarter of 2020: Special Report](#)
- [Drug and Alcohol Prevalence in Seriously and Fatally Injured Road Users Before and During the COVID-19 Public Health Emergency](#)

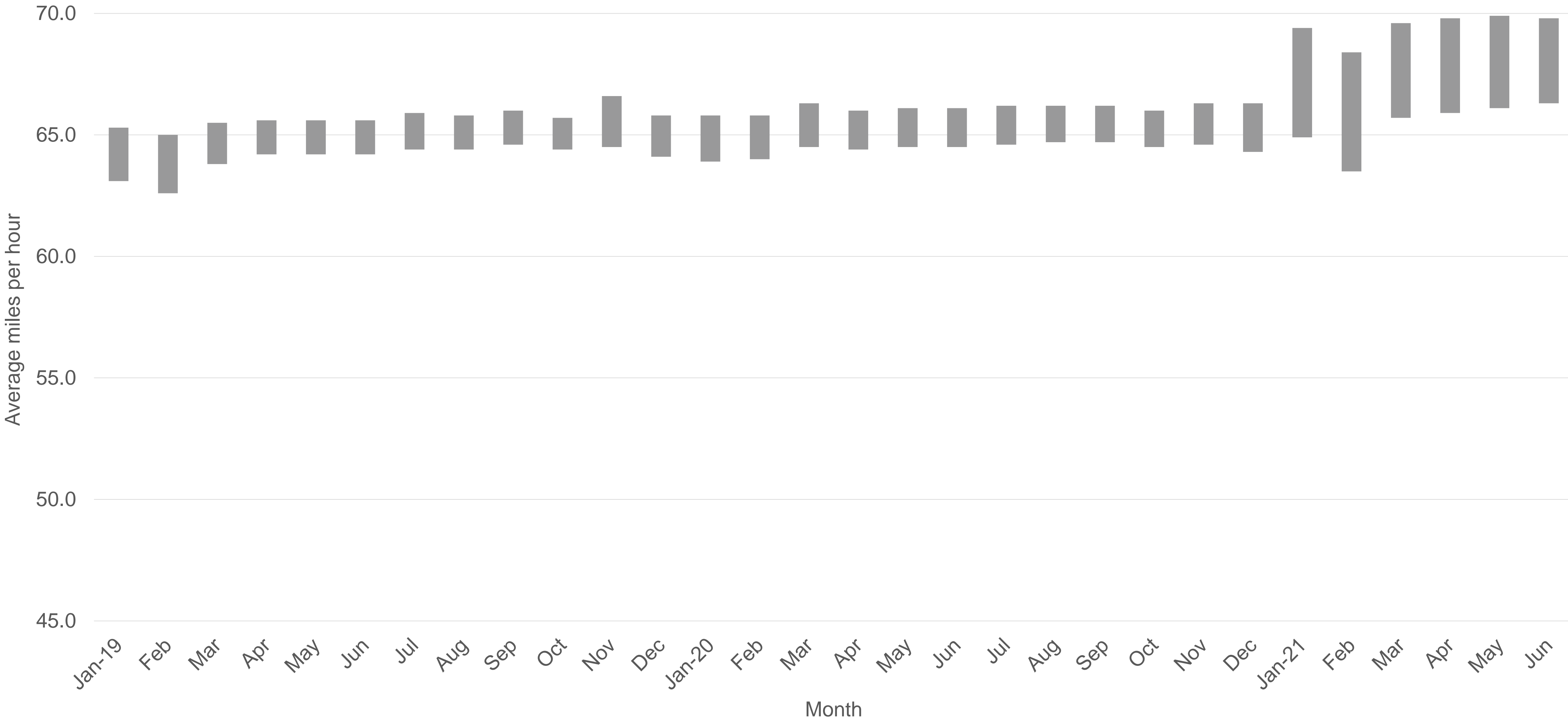


# Urban Interstates – Gap between Fastest and Slowest Average Speeds by Month

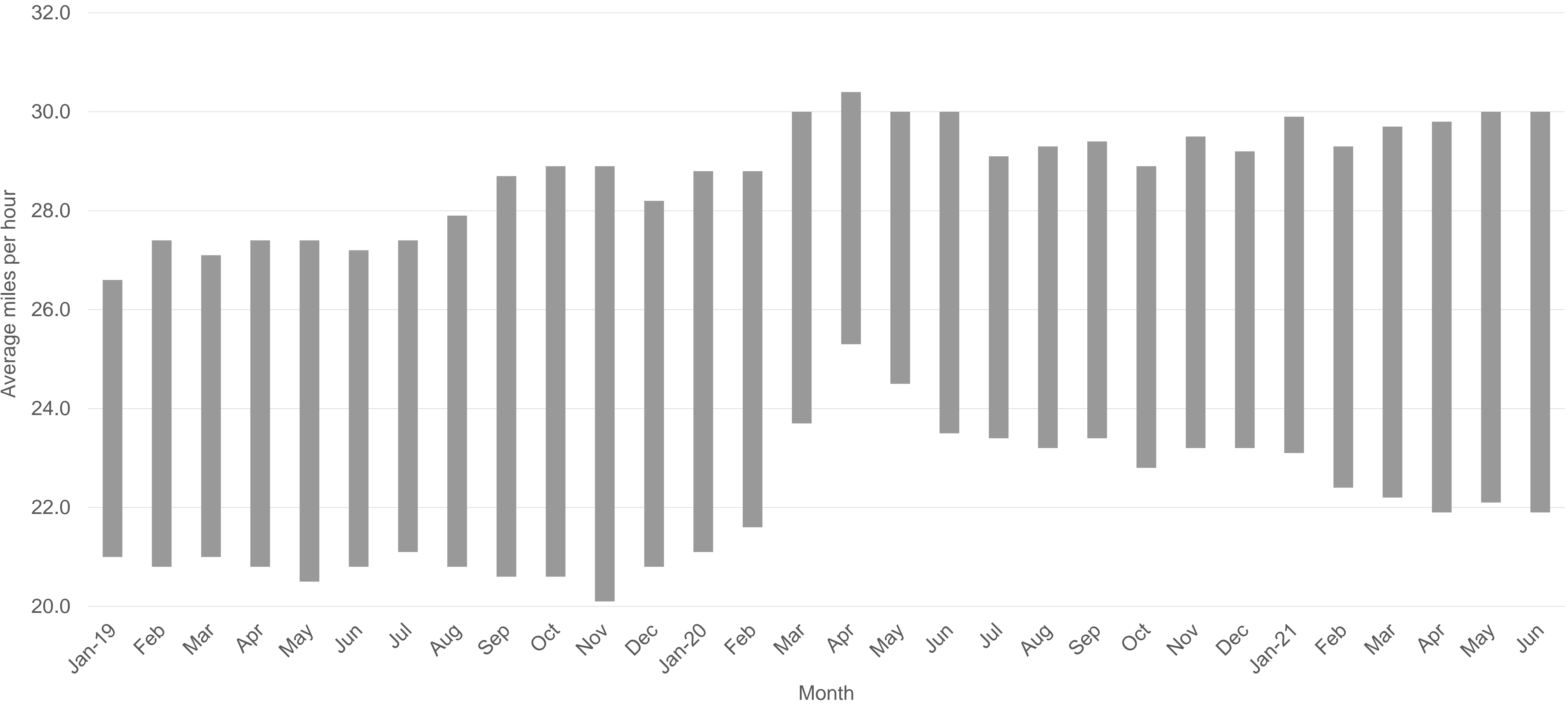




# Rural Interstates – Gap between Fastest and Slowest Average Speeds by Month

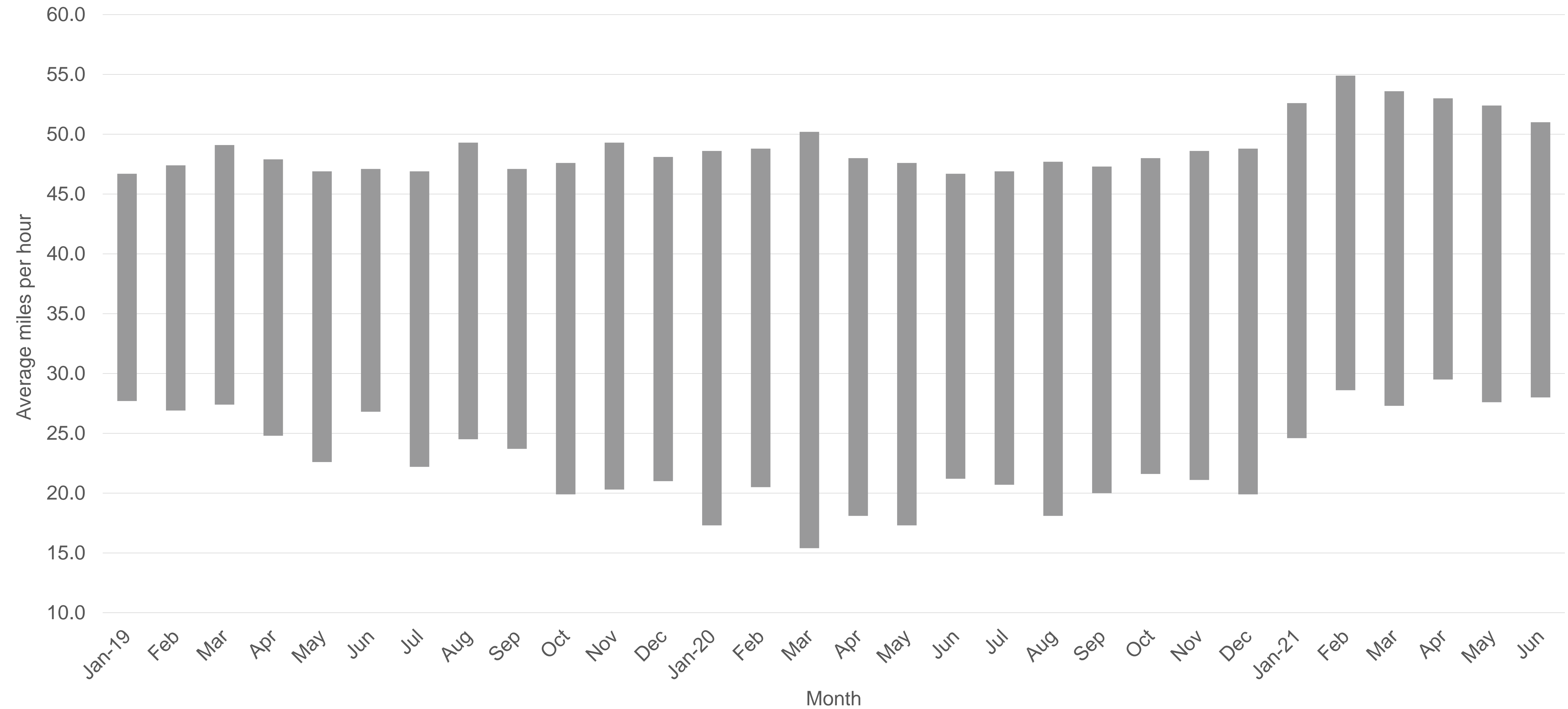


# Urban Major Collector – Gap between Fastest and Slowest Average Speeds by Month





# Rural Major Collector – Gap between Fastest and Slowest Average Speeds by Month



# Additional Resources

[Countermeasures That Work 10th Edition](#)

[NHTSA](#)

[Office of Behavioral Safety Research Reports](#)

[NCSA Motor Vehicle Traffic Crash Data Resources](#)

[Traffic Safety Marketing](#)

[NHTSA YouTube Playlists](#)

[NHTSA Image Library](#)

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